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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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22850	7590	10/20/2006	EXAMINER	
C. IRVIN MCCLELLAND OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			REGO, DOMINIC E	
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/751,497	Applicant(s) SEKINE ET AL.	
	Examiner Dominic E. Rego	Art Unit 2684	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7-12 and 16-18 is/are allowed.
- 6) ☒ Claim(s) 1-6 and 13-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>7/27/06, 2/26/04, 1/6/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

Claim 1 is objected to because of the following informalities: applicants use the limitation "the designating signal" in line 12 which should be "a designating signal".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 4-6 and 10-12 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Applicant uses the phrase "a change device" to all of the above claims which is not found in the specification.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

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only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-4 and 13-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Naden et al. (US Patent Application Publication #20030129985).

Regarding claim 1, Naden teaches a mobile communication terminal apparatus to communicate with a transmitting station together with other terminal apparatuses (*Figure 2, a mobile communication terminal apparatus 13A to communicate with a transmitting station 12 together with other terminal apparatuses 13B*), comprising:

an antenna unit configured to select at least one of a plurality of antenna radiation characteristics different from one another (*Paragraph 0003: Naden teaches Spatial processing exploits the multi-path characteristics of the mobile radio channel by means of multiple antennas at the transmitter and at the receiver. The benefit arises in two ways. Firstly, there is a diversity gain, which arises provided the antennas at the receiver are sufficiently far apart for the signals they receive to be uncorrelated. Then, the signal received at any one antenna varies independently of the signals received by the other antennas*), and receive a signal transmitted from the transmitting station according to the selected one of the antenna radiation characteristics, to generate a first signal (*Paragraph 0006: Naden teaches provided a mobile communications system in which communication with a plurality of mobile terminals is provided by a base station*);

a transmitter which transmits a detection signal to the other terminal apparatuses, the designation signal generated from the first signal, for designating the antenna radiation characteristics (*Paragraph 0006: Naden teaches wherein said*

terminals are adapted each to communicate with one or more adjacent similar terminals to establish disjoint groups of terminals);

a first receiver which receives another designation signal from the other terminal apparatuses (*Paragraph 0006: Naden teaches to perform a second processing step utilising exchanged information received from other terminals of the group so as to derive, from the received signals, a signal intended for reception by that terminal*);

a controller which controls the antenna unit to obtain the antenna radiation characteristic designated by the another designation signal (*Paragraph 0003: Naden teaches spatial processing exploits the multi-path characteristics of the mobile radio channel by means of multiple antennas at the transmitter and at the receiver. The benefit arises in two ways. Firstly, there is a diversity gain, which arises provided the antennas at the receiver are sufficiently far apart for the signals they receive to be uncorrelated. Then, the signal received at any one antenna varies independently of the signals received by the other antennas which are done by a controller*);

a second receiver which receives a second signal that is transferred from one of the other terminal apparatuses and is obtained by the antenna radiation characteristics selected by the other terminal apparatuses (*Paragraph 0006: Naden teaches to perform a second processing step utilising exchanged information received from other terminals of the group so as to derive, from the received signals, a signal intended for reception by that terminal*); and

a processor which processes the second signal and the detection signal in a diversity scheme (*Paragraph 0006: Naden teaches to perform a second processing step*

which has a processor utilising exchanged information received from other terminals of the group so as to derive, from the received signals, a signal intended for reception by that terminal; Paragraph 0003: Naden teaches spatial processing exploits the multi-path characteristics of the mobile radio channel by means of multiple antennas at the transmitter and at the receiver. The benefit arises in two ways. Firstly, there is a diversity gain, which arises provided the antennas at the receiver are sufficiently far apart for the signals they receive to be uncorrelated. Then, the signal received at any one antenna varies independently of the signals received by the other antennas).

Regarding claims 2 and 14, Naden teaches the terminal apparatus, further comprising a second transmitter which transmits the detection signal as the second signal when the antenna unit has the antenna radiation characteristic designated by the another designation signal (*Figure 2, a second transmitter 17A which transmits the detection signal as the second signal when the antenna unit has the antenna radiation characteristic designated by the another designation signal; Paragraphs 0003 and 0006*).

Regarding claims 3 and 15, Naden teaches the terminal apparatus, wherein the controller controls the antenna unit to select one of the plurality of antenna radiation characteristics designated under given conditions and sets the selected antenna radiation characteristic at the antenna unit, when there are a plurality of antenna radiation characteristics designated by the designation signal (*Paragraph 0003: Naden teaches spatial processing exploits the multi-path characteristics of the mobile radio*

channel by means of multiple antennas at the transmitter and at the receiver. The benefit arises in two ways. Firstly, there is a diversity gain, which arises provided the antennas at the receiver are sufficiently far apart for the signals they receive to be uncorrelated. Then, the signal received at any one antenna varies independently of the signals received by the other antennas; Paragraph 0006: Naden teaches wherein each terminal in a said group is arranged to perform a first processing step on signals received from the base station, to exchange with the other terminals of the group information derived from said first processing step, and to perform a second processing step utilising exchanged information received from other terminals of the group so as to derive, from the received signals, a signal intended for reception by that terminal).

Regarding claim 4, as best understood in view of the 112 first paragraph, Naden teaches the terminal apparatus, wherein the antenna unit comprises:

a plurality of antenna devices (Paragraph 0003);

a selection device configured to select at least one of the plurality of antenna devices as a selected antenna device (*Figure 2, a selection device configured to select at least one of the plurality of antenna device 17A or 171A*); and

a change device configured to change the selected antenna device to change over the antenna radiation characteristics (*Since the mobile terminal is always moving, it's antenna radiation characteristics also changing constantly*).

Regarding claim 13, Naden teaches a mobile communication method comprising:

receiving a signal transmitted from a transmitting station by an antenna unit that selects at least one of a plurality of antenna radiation characteristics different from each other (*Figure 2, a mobile communication terminal apparatus 13A to communicate with a transmitting station 12 together with other terminal apparatuses 13B*), to obtain a first signal;

detecting the first signal to output a detection signal (*Paragraph 0006: Naden teaches each terminal in a said group is arranged to perform a first processing step on signals received from the base station, to exchange with the other terminals of the group information derived from said first processing step*);

transmitting the detection signal to other terminals as a designation signal to designate the antenna radiation characteristic at the time of selecting the antenna radiation characteristics (*Paragraph 0006: Naden teaches wherein said terminals are adapted each to communicate with one or more adjacent similar terminals to establish disjoint groups of terminals*);

receiving another designation signal from the other terminal apparatuses (*Paragraph 0006: Naden teaches to perform a second processing step utilising exchanged information received from other terminals of the group so as to derive, from the received signals, a signal intended for reception by that terminal*);

controlling the antenna unit to obtain the antenna radiation characteristics designated by the another designation signal (*Paragraph 0003: Naden teaches spatial*

processing exploits the multi-path characteristics of the mobile radio channel by means of multiple antennas at the transmitter and at the receiver. The benefit arises in two ways. Firstly, there is a diversity gain, which arises provided the antennas at the receiver are sufficiently far apart for the signals they receive to be uncorrelated. Then, the signal received at any one antenna varies independently of the signals received by the other antennas which are done by a controller);

receiving a second signal that is transferred from the other terminal apparatuses and is obtained by the antenna radiation characteristics selected by the other terminal apparatuses (*Paragraph 0006: Naden teaches to perform a second processing step utilising exchanged information received from other terminals of the group so as to derive, from the received signals, a signal intended for reception by that terminal*); and

processing the second signal and the detection signal in a diversity scheme (*Paragraph 0006: Naden teaches to perform a second processing step which has a processor utilising exchanged information received from other terminals of the group so as to derive, from the received signals, a signal intended for reception by that terminal*; *Paragraph 0003: Naden teaches spatial processing exploits the multi-path characteristics of the mobile radio channel by means of multiple antennas at the transmitter and at the receiver. The benefit arises in two ways. Firstly, there is a diversity gain, which arises provided the antennas at the receiver are sufficiently far apart for the signals they receive to be uncorrelated. Then, the signal received at any one antenna varies independently of the signals received by the other antennas*).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Naden et al. (US Patent Application Publication #20030129985) in view of Miya et al. (US Patent Application Publication #20030186725).

Regarding claim 5, Naden teaches the terminal apparatus, wherein the antenna unit comprises:

a plurality of antenna devices (Paragraph 0003), except for a phase shifter which shifts a phase of output signals of the plurality of antenna devices to output a phase shift signal; a synthesizer which synthesizes the phase shift signal; and a change device configured to change an amount of the phase shift of the phase shifter to change over the antenna radiation characteristics.

However, in related art, Miya teaches a phase shifter which shifts a phase of output signals of the plurality of antenna devices to output a phase shift signal; a synthesizer which synthesizes the phase shift signal; and a change device configured to change an amount of the phase shift of the phase shifter to change over the antenna radiation characteristics (paragraph 0004).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to use the teaching of a phase shifter which shifts a

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phase of output signals of the plurality of antenna devices to output a phase shift signal; a synthesizer which synthesizes the phase shift signal; and a change device configured to change an amount of the phase shift of the phase shifter to change over the antenna radiation characteristics, as taught by Miya, in the Naden device in order to receive a desired signal.

Regarding claim 6, Naden teaches the terminal apparatus, wherein the antenna unit comprises:

an antenna device (Figure 2, element 17A);

a passive element arranged in close vicinity of the antenna device (*Figure 2, a passive element 171A arranged in close vicinity of the antenna; Paragraph 0003*), except for a variable terminal element connected to the passive element; and a change device configured to change a value of the variable terminal element to change over the antenna radiation characteristics.

However, in related art, Miya teaches a variable terminal element connected to the passive element (*Paragraph 0004: Miya teaches array antenna having a plurality of antennas, shifting an amplitude/phase (by a variable terminal) of the reception output (antenna output) of each antenna (passive element)*); and a change device configured to change a value of the variable terminal element to change over the antenna radiation characteristics (Paragraph 0004).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to use the teaching of a variable terminal element connected to the passive element; and a change device configured to change a value of

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the variable terminal element to change over the antenna radiation characteristics, as taught by Miya, in the Naden device in order to receive a desired signal as expected.

Allowable Subject Matter

5. Claims 7-12 and 16-18 are allowed.

Regarding claims 7 and 16, the prior art of record, specifically Naden teaches a mobile communication terminal apparatus to communicate with a transmitting station together with other terminal apparatuses (*Figure 2, a mobile communication terminal apparatus 13A to communicate with a transmitting station 12 together with other terminal apparatuses 13B*), comprising:

an antenna unit configured to select at least one of a plurality of antenna radiation characteristics different from one another (*Paragraph 0003: Naden teaches Spatial processing exploits the multi-path characteristics of the mobile radio channel by means of multiple antennas at the transmitter and at the receiver. The benefit arises in two ways. Firstly, there is a diversity gain, which arises provided the antennas at the receiver are sufficiently far apart for the signals they receive to be uncorrelated. Then, the signal received at any one antenna varies independently of the signals received by the other antennas*), and receive a signal transmitted from the transmitting station according to the selected one of the antenna radiation characteristics, to generate a first signal (*Paragraph 0006: Naden teaches provided a mobile communications system in which communication with a plurality of mobile terminals is provided by a base station*);

a wave detector which detects the first signal to output a detection signal

(Paragraph 0006: Naden teaches each terminal in a said group is arranged to perform a first processing step on signals received from the base station, to exchange with the other terminals of the group information derived from said first processing step);

a receiver which receives a signal which is transmitted from the other terminal apparatuses and represents the detection signal, to generate a reference signal

(Paragraph 0006: Naden teaches to perform a second processing step utilising exchanged information received from other terminals of the group so as to derive, from the received signals, a signal intended for reception by that terminal);

a first transmitter which transmits a designation signal for designating the first antenna radiation characteristics, to the other terminal apparatuses *(Paragraph 0006: Naden teaches wherein said terminals are adapted each to communicate with one or more adjacent similar terminals to establish disjoint groups of terminals);*

a controller which controls the antenna unit to obtain the second antenna radiation characteristics *(Paragraph 0003: Naden teaches spatial processing exploits the multi-path characteristics of the mobile radio channel by means of multiple antennas at the transmitter and at the receiver. The benefit arises in two ways. Firstly, there is a diversity gain, which arises provided the antennas at the receiver are sufficiently far apart for the signals they receive to be uncorrelated. Then, the signal received at any one antenna varies independently of the signals received by the other antennas which is done by a controller); and*

a second transmitter which transmits the detection signal to the other terminal apparatuses, when the antenna unit has the second antenna radiation characteristics (*Paragraph 0006: Naden teaches provided a mobile communications system in which communication with a plurality of mobile terminals is provided by a base station, wherein said terminals are adapted each to communicate with one or more adjacent similar terminals to establish disjoint groups of terminals*);

However, none of the prior art of record either in alone or in combination discloses or provides the motivation to an operator which operates a correlation value between the reference signal, and the detection signal of the selected antenna radiation characteristic at the time of selecting the antenna radiation characteristic;

a determination device configured to determine first antenna radiation characteristics of the other terminal apparatuses and second antenna radiation characteristics to be set at the antenna unit, based on the correlation value.

Dependent claims 8-12, 17, and 18 are allowed for the same reason.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dominic E. Rego whose telephone number is 571-272-8132. The examiner can normally be reached on Monday-Friday, 8:30 am-5 pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nay Maung can be reached on 571-272-7882. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Dominic E. Rego


PHILIP J. SOBUTKA
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10/15/06